



The Effect of Prior Knowledge and Technology Mastery on the Readiness to Become Prospective Teachers in Students of the Education Study Program at FPEB, Universitas Pendidikan Indonesia

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Abstract. This study aims to determine the influence of prior knowledge and mastery of technology on the readiness to become prospective teachers through the value of lesson planning courses, learning evaluation, and ICT literacy and learning media. This research method uses quantitative methods. The population used in this study were students of the education study program at the FPEB UPI class of 2020. Data analysis used multiple regression analysis, which showed that prior knowledge did not affect readiness to become prospective teachers. At the same time, mastery of technology positively affected readiness to become prospective teachers.

Keywords: Readiness to Become a Teacher.

1 Introduction

The quality of professional human resources must support education development in a nation. One of them is to produce professional teacher candidates as prospective educators for the nation's generation. The institution responsible for this is Lembaga Pendidikan Tenaga Kependidikan (LPTK). LPTK are responsible for ensuring the achievement of graduate competencies according to qualifications (1). An example of an LPTK in Indonesia is the Indonesian University of Education (UPI).

The UPI curriculum states that one of the competencies that educational graduates must possess is teaching according to their field of study and becoming professional educators. The UPI campus has several faculties, including the Fakultas Pendidikan Ekonomi dan Bisnis (FPEB). FPEB Faculty has several educational and non-educational departments. Education majors at FPEB are Economics Education, Business Education, Accounting Education, and Office Management Education, while non-educational majors at FPEB consist of Accounting, Management, and Islamic Finance Economics majors. Prospective students majoring in education at FPEB are prepared as prospective teachers who can later implement the teaching skills they have learned in their respective fields of study.

A prospective teacher is someone prepared to enter the world of education per the competencies he has learned while taking his field of study. Teachers also have an important role in the education system, which must receive central, first, and foremost attention because they influence the creation of quality learning processes and outcomes (2). According to (3), "readiness is the overall condition of a person that makes him ready to respond/answer in a certain way to the situation at hand". Meanwhile, according to (2), the readiness of prospective teachers must be fulfilled in competency because when a teacher already has qualified competence, he is said to have sufficient readiness to do something. The competencies referred to are already listed in the Teacher and Lecturer Law No. 14 of 2005, chapter IV, article 10, regarding pedagogic, personal, professional, and social competence. A prospective teacher must master these four competencies to create teachers who are professional and ready to enter the world of education.

We can analyze the readiness to become prospective teachers using the behavioristic theory developed by Thorndike, which produces several laws of learning, one of which is the law of readiness. This law of readiness states that an individual in the learning process must be in a ready condition, both physically and mentally, to respond to or learn new knowledge and behaviour in order to achieve success in the learning process. According to Thorndike (4), an individual has three conditions for learning readiness. First, the tendency to respond to a stimulus can cause the individual to act and do so because the individual is satisfied and, as a result, does not take other actions. Second, the tendency to respond to a stimulus can cause the individual to act but not do so because the individual feels dissatisfied and, as a result, will take another action. Third, the tendency not to respond to stimuli can cause the individual to do so, but dissatisfaction arises and, consequently, will take other actions.

FPEB students majoring in education class of 2020 have taken Basic Education Courses (MKDK), namely learning strategies, learning evaluation/assessment, lesson planning, and ICT literacy and learning media. These four courses can form students' initial knowledge to have the ability to become a prospective teacher. Research conducted by (5) states that mastery of Basic Education Courses influences student readiness to become prospective teachers. Meanwhile, research conducted by (6) showed that mastery of study and learning subjects had a significant effect on readiness to become prospective teachers, and mastery of teaching evaluation courses did not have a significant but positive effect on readiness to become prospective teachers. Therefore, students majoring in education must improve their mastery of MKDK material to provide initial knowledge about educational theories.

Learning in the 21st century gives great attention to the world of education to adapt to changes in how teachers teach in the process and learning outcomes (7). The 21st century is popular with the development of Science and Technology (IPTEK), which transforms the learning model shown by the curriculum, media, and technology transition. Thus, teachers can develop the improvement of digital technology by working on varied and educational learning content (8).

According to the research results, technological ability, pedagogical ability, and knowledge have a significant positive effect on the readiness of students to become teachers (9). This is also supported by the results of research by Zulhazlinda, W., Noviani, L., & Sangka, K.B. (2023), which shows that TPACK (Technological Pedagogical and Content Knowledge) ability has a positive and significant effect on readiness to become a professional teacher. Mastery of technology in education students is needed to support readiness to become prospective teachers (10). Based on this, FPEB students majoring in education class of 2020 have taken ICT literacy and learning media courses, which equip them with the ability to design learning media that are interesting, interactive, and communicative through technological advances using digital technology.

FPEB students of the education program class 2020 are included in Generation Z because they were born in 1995 - 2010. Generation Z, or iGeneration (internet generation), is known to be very close to mastering technology and information. The results of research by Bencsik and Machova (2016) in Putra (2017) mention the characteristics of Generation Z, namely being born in conditions when access to information and technology has become an increasingly massive global culture (11). This also affects the values, views, and life goals of Generation Z. The development of technology and information has become a part of their daily lives. They constantly interact using cell-phones and PCs to explore all the information on the internet. Indirectly, this affects the personality of Generation Z. Therefore, the mastery of technology in Generation Z must be utilized in things that provide good changes, especially in education. Innovations that can be given to the world of education can be done through learning based on TPACK, which helps prospective teachers in teaching and improving material mastery skills combined with technology so that learning for students is more interesting and can be implemented in digital learning (12).

Based on the explanation of the topic discussed, the researcher wants to prove whether prior knowledge and mastery of technology can affect the readiness to become prospective teachers. Therefore, the researcher will conduct a study titled "The Effect of Prior Knowledge and Ability to Master Technology on Readiness to Become Prospective Teachers in Education Study Program Students at FPEB, Universitas Pendidikan Indonesia".

2 METHOD

This study uses a quantitative descriptive method. The quantitative research method is based on the philosophy of positivism and is used to examine specific populations or sample data collection using research instruments. Data analysis is quantitative/statistical. The goal is to test a confirmed hypothesis (13).

The population used in this study were students of the education study program at the Fakultas Pendidikan Ekonomi dan Bisnis, Universitas Pendidikan Indonesia class of 2020, covering 4 study programs, namely Economics Education, Accounting

Education, Business Education, and Office Management Education. From this population, 57 people are willing to fill out the questionnaire.

The instrument used in this study was a closed questionnaire in the form of multiple choice course scores and a Likert scale where the variables to be measured were translated through variable indicators. The answer to each item of the Likert scale variable indicator ranges from strongly disagree to strongly agree.

Before data analysis, the researcher tested the validity of the data, and the results were valid so that all items in the research instrument were declared fit for use in data analysis. The researcher also tested the reliability of the data on the research instruments, the results of which were all reliable items. The data normality test was also carried out, and the results were normally distributed.

This study uses primary data obtained directly through questionnaires or questionnaires on research objects regarding initial knowledge and ability to master technology as independent variables and readiness to become prospective teachers as the dependent variable. From these data, researchers can see the effect of prior knowledge and ability to master technology on readiness to become prospective teachers.

3 RESULTS AND DISCUSSION

3.1 Description of Respondents

Based on the questionnaire results, it was found that most (71.9%) of the samples were female students, and the rest (28.1%) were male students. All these respondents are students majoring in education at FPEB who have taken courses in learning planning, evaluation, ICT literacy, and learning media. Respondents who filled out this questionnaire were, on average, from the class of 2020, majoring in economics education and accounting education.

Table 1. Respondent Characteristics

| Gender | Frequency | Percentage |
|--------|-----------|------------|
| Male | 41 | 71,9% |
| Female | 16 | 28,1% |
| Total | 57 | 100% |

3.2 Descriptive Analysis of Variables

The prior knowledge variable is measured using a questionnaire containing several basic educational course grades (MKDK) taken by students majoring in education at FPEB UPI, namely the value of learning evaluation courses, learning planning, and ICT literacy courses and learning media. The research data are categorized into five categories: very low, low, medium, and high and very high. For more details can be seen in Table 2 below:

Table 2. Frequency Distribution of Initial Knowledge

| Category | Frequency | Percentage (%) |
|-----------|-----------|----------------|
| Very Low | 0 | 0 |
| Low | 4 | 7,02 |
| Medium | 12 | 21,05 |
| High | 38 | 66,67 |
| Very High | 3 | 5,26 |
| Total | 57 | 100 |

Source : (author's work)

Based on Table 2, it is known that the initial knowledge variable in students majoring in education at FPEB UPI is included in the high category, namely 66.67%, with a frequency of 38 students. This indicates that most students who enter the research sample can easily master initial knowledge in several basic education courses, namely, learning evaluation courses, learning planning, and ICT literacy and learning media. The technology mastery ability variable is measured by seven indicators, which include seven question items with the results averaged. The results showed the lowest average value of 3.71, with as many as one respondent, and the highest average value of the interval 6-7, with as many as 17 respondents.

Table 3. Frequency Distribution of Technology Mastery Ability

| Category | Frequency | Percentage (%) |
|----------|-----------|----------------|
| Very Low | 0 | 0 |
| Low | 1 | 1,75 |
| Medium | 12 | 21,05 |

| | | |
|-----------|----|-------|
| High | 27 | 47,37 |
| Very High | 17 | 29,82 |
| Total | 57 | 100 |

Based on the results of descriptive analysis, Table 3 shows that the ability to master technology for students majoring in education at FPEB is included in the high category with a percentage of 47.37% with a frequency of 27 students. This indicates that students who enter the research sample have the ability to master technology.

The readiness variable to become prospective teachers is measured by seven indicators, which include fifteen question items. The results showed that the lowest average value of 4.47 was in the moderate category with a frequency of 2 respondents, and the highest average value was in the 6-7 interval with as many as 26 respondents.

Based on the results of descriptive analysis, table 4 shows that the readiness to become prospective teachers for students majoring in education at FPEB, the level of readiness is included in the high category with a percentage of 45.61% with a frequency of 29 people out of 57 student respondents, this indicates that students included in the research sample have a fairly high readiness to become prospective teachers.

Table 4. Frequency Distribution of Readiness to Become Prospective Teachers

| Category | Frequency | Percentage (%) |
|-----------|-----------|----------------|
| Very Low | 0 | 0 |
| Low | 0 | 0 |
| Medium | 2 | 3,51 |
| High | 29 | 50,88 |
| Very High | 26 | 45,61 |
| Total | 57 | 100 |

3.3 Hypothesis Testing Results Hypothesis:

H1 = There is an influence of Initial Knowledge (X1) on Readiness to Become Prospective Teachers (Y)

H2 = There is an influence of Technology Mastery Ability (X2) on Readiness to Become Prospective Teachers (Y)

H3 = There is an effect of Initial Knowledge (X1) and Technology Mastery Ability (X2) simultaneously on Readiness to Become a Prospective Teacher (Y)

The results of multiple linear regression analysis are briefly presented in the table as follows:

Table 1.4 Summary of Multiple Linear Regression Analysis Result

| Model | Unstandardized Coefficients | | Standardized Coefficients | | | |
|-------|-----------------------------|------------|---------------------------|------|-------|------|
| | B | Std. Error | Beta | t | Sig. | |
| 1 | (Constant) | 36.493 | 18.641 | | 1.958 | .055 |
| | X1 | .069 | .213 | .030 | .324 | .747 |
| | X2 | 1.203 | .150 | .737 | 8.030 | .000 |

Hypothesis Testing H1 and H2 with t Test Testing the First Hypothesis (H1)

. It is known that the significance value for the effect of initial knowledge (X1) on readiness to become prospective teachers (Y) is $0.747 > 0.05$. The t value is $0.324 < 2.004$, so it can be concluded that H1 is rejected, which means there is no initial knowledge (X1) effect on Readiness to Become Prospective Teachers (Y).

Second Hypothesis Testing (H2)

. It is known that the significance value for the effect of technology mastery ability (X2) on readiness to become prospective teachers (Y) is $0.000 < 0.05$. The t value is $8.030 > 2.004$, so it can be concluded that H2 is accepted, which means that technology mastery ability (X2) affects readiness to become prospective teachers (Y).

Hypothesis Testing H3 with F Test

. Based on the output above, it is known that the significance value for the simultaneous effect of X1 and X2 on Y is $0.000 < 0.05$. The calculated F value is $32.491 > 3.16$, so it can be concluded that H3 is accepted, which means that there is an effect of initial knowledge (X1) and the ability to master technology simultaneously on readiness to become prospective teachers (Y). Then, the regression equation can be obtained as follows:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + e \quad (1)$$

$$Y = 36.49 + 0.07X_1 + 1.20X_2 + e \quad (2)$$

Based on this equation, it shows that all variables have a positive influence. This means that when the initial knowledge (X1) increases, the readiness to become a prospective teacher (Y) will also increase. Vice versa, when the initial knowledge (X1) decreases, the readiness to become prospective teachers (Y) decreases.

Coefficient of Determination

. Based on the output above, it is known that the R square value is 0.546. This means that the effect of the initial knowledge and mastery ability variables simultaneously on the readiness to become prospective teachers (Y) variable is 54.6%, and other variables influence the remaining 45.4%.

Based on the results of data analysis, it is known that initial knowledge does not significantly affect readiness to become prospective teachers. Judging from the study results, 66.6% of students in the FPEB education department are in the high category in mastering initial knowledge. It can be interpreted that many other factors can influence readiness to become prospective teachers. Initial knowledge is a set of knowledge and experiences that a person already has obtained from various life experiences. This initial knowledge is carried and used for a new experience or knowledge. Prior knowledge has an important influence on learning (14). The readiness that needs to be done by a teacher is the ability to master subject matter physical and mental abilities (15).

Readiness to become a teacher is a situation of prospective teacher students who can master four teacher competencies obtained since they became students (16). (17) states that readiness to become a teacher is a situation of prospective teacher students seen from their abilities, and what makes them ready to carry out their main duties as teachers can be seen through understanding teacher competencies. Competence is also a benchmark to see the quality of a teacher in carrying out his duties as a teacher and educator (18), (19), (20); (21).

Based on the law of readiness conveyed by Throndike, the relationship between stimulus and response will be easily formed when there is a readiness in the individual. What is meant by stimulus in this study is the initial knowledge that equips knowledge in the field of education. Teacher readiness must be formed since they are students, and there are basic factors that support readiness, one of which is interest. Interest is a motivational factor that influences a person's willingness to do or make choices in a job. Interest in becoming a teacher from education students should be higher than non-education students because they are equipped with initial knowledge through several Basic Education Courses (MKDK), in contrast to research conducted by (6), which explains that there is a positive and significant effect of mastery of learning and learning course materials, teaching evaluation, and field experience practices on student readiness to

become teachers. This is because there is a factor of field experience practice (PPL) as an additional research instrument for these students.

Effect of Technology Mastery Ability on Readiness to Become Prospective Teachers
Based on the results of data analysis, it is known that the ability to master technology significantly affects readiness to become prospective teachers. Judging from the results of the study, 47.37% of students included in the high category in having the ability to master technology. This can be interpreted that the better the technology skills of prospective teacher students, the better the readiness of students to become prospective teachers. This study also supports the social learning theory of career decision-making (SLTCDM) theory that individual career decision choices influence career readiness. In contrast, career decisions are influenced by learning experiences (22). The results of learning experiences will shape individual interests, abilities, beliefs, values and qualities. Therefore, these learning experiences affect work or career readiness (23). While in college, students have taken courses that support technology skills, such as digital learning in their respective majors and ICT literacy and learning media. When prospective teachers decide on a career as a teacher, it is necessary to know that the current learning era requires high technological capabilities for prospective teachers. This makes prospective teachers have the readiness of technological knowledge and skills that are mastered to be taught to students later (24).

The results of the study are in accordance with previous research, which obtained results that technological ability, pedagogical ability, and knowledge in accounting have a significant positive effect on the readiness of students to become teachers (25). In line with the results of other studies, technological ability has a significant positive effect on the readiness of students to become teachers (26), (27), (24), (28). The results of this study indicate that the technological skills mastered by prospective teachers are very high. The use of technology in learning will be successful when teachers master technological capabilities; for this reason, prospective teachers are required to master technology well for success in learning (29). Supported by (24), prospective teachers who master technological skills will be ready to work.

Information, Communication, and Technology Literacy courses and learning media / ICT literacy and learning media are prepared so prospective teachers are literate in technology-based learning, such as learning videos, multimedia, and electronic learning (e-learning) (30). The virtual environment now becomes an excellent opportunity for prospective teachers to improve their technological capabilities in strengthening the readiness and performance of prospective teachers through training and teaching experience while in teacher education (31).

4 CONCLUSION

Initial knowledge and mastery of technology are the readiness factors for prospective teachers. When initial knowledge and mastery of technology increase, the readiness to

become prospective teachers also increases. Based on the results of the study, it can be concluded that initial knowledge in education students at the Faculty of Economics and Business Education, Universitas Pendidikan Indonesia class of 2020, does not have a significant influence on the readiness of prospective teachers, while mastery of technology has a significant influence on the readiness of prospective teachers.

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